

deemed expired, the Journal of proceedings be approved to date, the time for the two leaders be reserved for their use later in the day, and morning business be closed.

The PRESIDING OFFICER. Without objection, it is so ordered.

#### ORDER FOR ADJOURNMENT

Mr. McCONNELL. Mr. President, if there is no further business to come before the Senate, I ask unanimous consent that it stand adjourned under the previous order, following the remarks of Senator WHITEHOUSE and Senator WARREN.

The PRESIDING OFFICER. Without objection, it is so ordered.

The Senator from Rhode Island.

Mr. WHITEHOUSE. Mr. President, I ask unanimous consent to speak for up to 20 minutes in morning business.

The PRESIDING OFFICER. Without objection, it is so ordered.

#### CLIMATE CHANGE

Mr. WHITEHOUSE. Mr. President, I am here to give my weekly "Time to Wake up" speech. It is occurring on a day when the President has signed an Executive order that purports to be an effort to undo a good deal of work the American Government has done to address climate change. I have to say that it is a little bit hard to take this Executive order very seriously when the President is in trouble, which seems to be an everyday experience for him right now. The White House staff seems to entertain him and distract him by putting on these amateur theatricals in which they can give him a nice big folder that he can make a big signature on with a flourish and feel like he is doing something significant, when, in fact, these entertainments create little effect and mostly just confusion.

The administrative agencies that he is purporting to direct to stop taking action on climate change have a couple of differences from this particular Oval Office. One is that they are obliged to follow the law and will be held to the law. The second is that under the Administrative Procedures Act, they have to follow real facts. They don't get to make up "alternative facts" in the fever swamp of the Breitbart imagination—at least not for long, because their record can be reviewed by courts. Finally, they can't make decisions that are, to use the standard of administrative law, "arbitrary and capricious." This is an Oval Office that lives by "arbitrary and capricious," but administrative agencies don't get to follow it there without having their rulings thrown out by courts.

So ultimately this is going to come down to lawyers and to courts, and lawyers and courts are actually pretty good places for addressing climate change seriously because it is very hard for the lies that are at the heart of climate denial to withstand cross-

examination and to stand up to the obligation of witnesses to actually testify truthfully and under oath in court proceedings or even in administrative proceedings.

The inconsistencies of people's statements and behavior can be brought out through cross-examination, which has been described as "the greatest engine for the discovery of truth ever invented."

Discovery means that litigants get access to documents on the other side, and it also means that the court has a chance to look into conflicts of interest.

Administrator Pruitt, thanks to the backing of the fossil fuel industry, which is well on its way in trying to turn America into a banana republic through its interests, actually got through the Senate without ever having to disclose who funded his dark money operation. That alone is a kind of preposterous statement, but it is true, because the Senate majority wouldn't insist that those questions be answered because they were so all-fired eager to shove this fossil fuel tool into the Administrator's seat at EPA. Those questions never got answered.

Once there is a case brought against him in which he has to decide whether to recuse himself and that decision gets reviewed by a court, guess what. A court gets to have those questions answered. So there is going to be a lot more that gets discovered as this all goes forward.

The President, with the Executive order today, has made himself ridiculous, which is no great achievement given his recent record. He has made his administration ridiculous, which is unfortunate but not unexpected given the climate-denying crowd who has been given positions of responsibility in this administration. Unfortunately, he has also made the United States of America ridiculous, at least until the checks and balances of government set aright the forces unleashed by this ridiculous Executive order. So let's go on to something that is a little bit more fact-based and serious.

I take climate trips to various places. I went to Ohio back in 2015, and there I met two remarkable and very cool people: Ellen Mosley Thompson and her husband, Lonnie Thompson. They have been married for 45 years, and that is also how long, more or less, they have been research partners. They do particularly amazing research. They are glaciologists. They study glaciers. They run the Byrd—as in Commander Byrd—Polar and Climate Research Center at Ohio State. They have spent years and years, decade after decade, studying the world's glaciers and leading expeditions to the far corners of the world to incredible places—to the North Pole, the South Pole, the Greenland ice cap, the high mountains of Peru, and glaciers in faraway China.

They gave me this on my visit. This is a little piece of a plant. You can look closely at it, and you can see the little

sticks and leaves that are in it. This plant has an interesting history. It grew about 6,600 years ago, and when it grew and lived, woolly mammoths roamed the Earth. Woolly mammoths might have been eating neighboring plants. The human race was just entering the Bronze Age, and it began to snow. It snowed on this little plant. Snow piled on snow year after year, and this plant was buried under a glacier, preserved by the pressure and the cold. And there it stayed, so that now I can hold it up on the floor of the Senate 6,600-and-some years later.

Climate change is what brought me this plant because as temperatures steadily rise, glaciers the world over are melting. The glacier that buried this little plant 6,000 years ago receded so fast that here it is now—6,000 years in a glacier and now here in my hand in the Senate.

It is not just plants that are emerging from this great melting. We are actually seeing remains of our own long-dead ancestors emerge from melting glaciers. This is all becoming so common that a new field of study has been created—glacial archeology.

For my 162nd "Time to Wake up" speech, I will share the story of the warming Arctic and our world's disappearing glaciers.

The Thompsons, when they leave Ohio State and travel, drill down into the ice, and they take deep core samples out of the glacier, long tubes of ice from the glacier. For Ellen and Lonnie, that means long trips and some challenging logistics, making sure that packed-down ice and snow containing hundreds of thousands of years of accumulated snow and ice doesn't melt along the way back to their lab at Ohio State because in those hundreds of thousands of years of accumulated snow and ice are hundreds of thousands of years of data.

I remember going to visit them. They store the core samples from these glaciers around the world in a huge walk-in freezer. It is like a library with metal shelving, except instead of having books on the shelves, it has these tubes, and they are marked as to where they were drilled out. You can pull the tubes off the shelf and take them to a viewer, and they have a light underneath it, and you can look at the light coming through it. You can see bubbles in the glass that captured the atmosphere from thousands of years ago, and you can draw the air out of those ancient bubbles and learn what the atmosphere was like back then.

There was a line through the core that they showed me, and I asked them: What is this line in the core? They said: Well, that was a really bad sandstorm. It is actually written about in ancient Egyptian hieroglyphs, and we can connect the timing of those ancient Egyptian hieroglyphs talking about this terrific sandstorm and going back through time, the date. And we know that this dark line in the core reflects that big storm that ancient

Egyptians wrote about thousands of years ago.

There are other researchers doing similar things. France and Italy have researchers creating a separate ice core repository, and they have dubbed their project “Protecting Ice Memory.” Their bunker for these cores is going to be 33 feet under Antarctica’s surface, where they hope to be able to keep the cores cold for posterity because given the rate of climate change, these carefully preserved, packed-away, and frozen ice core samples are probably going to be the last record we have of all the information that was left in and lost in melting glaciers.

This photo depicts Grinnell Glacier in Montana in what is now called Glacier National Park. This was a picture that was taken in 1940. You can see the glacier here pushing up into the mountain. In this photo, you can now see the glacier as it is here. If it is not clear, all of this is not glacier; it is lake, it is water.

The U.S. Geological Survey described what was going on as Grinnell Glacier lost 90 percent of its ice in this last century. Here is what the U.S. Geological Survey said:

Glacier recession is underway, and many glaciers have already disappeared. The retreat of these small alpine glaciers reflects changes in recent climate as glaciers respond to altered temperature and precipitation. It has been estimated that there were approximately 150 glaciers present in 1850, and most glaciers were still present in 1910 when the park was established. In 2010, we consider there to be only 25 glaciers larger than 25 acres remaining in Glacier National Park.

There were 150 glaciers 100 years ago and 25 now. I wonder what they will call Glacier Park when all the glaciers are gone.

This was—is or was, depending on what you look at—Lillian Glacier up in the State of Washington in Olympic National Park. On the top, we see the healthy glacier in 1905. In 2010, it is virtually all gone. There are just little bits of snow in exposed mountain.

Glacier loss is not just happening in our parks in the United States; it is happening all over the world. A man named Christian Aslund has been documenting this recently, and National Geographic has printed his work. What he did was go to the archives of the Norwegian Polar Institute, and he found pictures of glaciers in Svalbard, Norway, back from the 1920s—old black and white pictures. Then he went back to the exact same spot from which the old picture was taken, and he took a picture. Most of these are from 2003, so some time has gone by since he took the picture, and the situation has actually gotten worse.

You will see here that these two mountaintops that are sticking above this glacier are these two mountaintops right there, but, of course, the glacier is no longer there. You just see a bit of snow back there behind the shore.

Here you see this vast wall of ice and the glacier pushing back up into these mountains behind it.

Here the wall of ice is essentially gone. You see this whole mountain front that has opened up, and the glacier is now simply back up in the valley behind it.

You can see the glacier here from the 1920s filling up this valley and the streams coming off the base of it down there.

Here you see the glaciers completely gone. The rock is exposed, and there is a lake at the bottom, and you have to actually look over the top of the mountain to this faraway peak to even see any snow in the photograph.

It is the same story elsewhere in the Arctic. The Greenland ice sheet is the world’s second largest glacier landmass.

A study last year from the journal *Science Advances* found that we might have underestimated the current rate of mass loss of the Greenland ice sheet by about 20 billion tons per year.

As “*Science*” magazine recently highlighted, the accelerating surface melt of ice and snow off the Greenland ice sheet, since 2011, has doubled—Greenland’s contribution to global sea level rise. It is a phenomenon that the Presiding Officer sees and hears about in his home State of Florida all the time. All told, the melting Greenland ice sheet holds the equivalent of more than 23 feet of sea level rise in its ice. That would be a lot in Miami. That would be a lot in Providence. That would change the map of the United States of America.

Why are these glaciers changing and shrinking? Obviously because the Earth is warming and ice melts. Over the last 150 years, industrial activities of modern civilization have caused the burning of fossil fuels like coal and oil. Their emissions have increased the concentration of greenhouse gases in the atmosphere, and we have known since Abraham Lincoln was President that that traps heat in the atmosphere, warming the planet.

What we are learning more and more is how much the warming of the planet accelerates at the Poles. The distribution of the warming is not even across the Earth. Things are warming much faster at the Poles. The Norwegian Polar Institute found that the rate of warming in the Arctic is about twice as high as the global average. For one thing, when snow and ice melt, they can expose darker surfaces underneath, whether it is water or Earth or rock, and a darker surface will absorb more solar energy than reflective snow and ice, and that warms the region even faster. So climate change has this compounding effect in the high latitudes.

Temperatures in the Arctic were the highest in recorded history for the period between December 2016 and February 2017. The World Meteorological Organization noted that “at least three times so far this winter, the Arctic has witnessed the polar equivalent of a heat wave.” What this means in layman’s terms is that when the ice in the

Arctic should have been freezing in the deep midwinter, it was actually melting. More warming and more melting mean more sea level rise.

Last year, researchers published in “*Nature*” an updated estimate of global sea level rise as this phenomenon accelerates. The prediction is not pretty. This new study doubles the previous estimate, putting global sea level rise over 6 feet by the end of this century.

This led to the January NOAA report that I discussed last week which updated global sea level rise region-specific assessments for our U.S. coastline. The report raised the previous upper range or extreme scenario for average global sea level rise in the year 2100 by 20 inches, to a total of 8.2 feet.

NOAA and its partners’ findings were particularly harsh for the western Gulf of Mexico—the back side of Florida, if you will—and the northeast Atlantic coast; that is, Virginia through Maine, including my home State of Rhode Island. Coastal managers, like Rhode Island’s Coastal Resources Management Council, or CRMC, are taking these new estimates very seriously and incorporating the “high” scenario into their planning, with the local high scenario now projected for Rhode Island by our CRMC at between 9 and 12 vertical feet of sea level rise. And, of course, when you go up 9 feet or 12 feet, you go back many hundreds of feet in many places. And all of this, whether it is happening in Florida or whether it is happening in Rhode Island or whether it is happening in other coastal States, it all starts with warming seas and melting glaciers.

When National Geographic caught up with Aslund a few weeks ago, he said something striking: “What’s happening in the Arctic is spreading around the whole globe.” These pictures he had taken 14 years ago now—back in 2003—were just the beginning.

Kiribati, an island nation, has to face the real consequences of climate change and sea level rise. It is preparing to become a modern-day Atlantis—lost forever to the waves. Aslund describes a meeting with Kiribati’s President: “He knows climate change is just a fact . . . they’re buying upland in Fiji so they can evacuate in the future.”

I will end with one final quote from Mr. Aslund. When asked about the devastating effects of climate change that he had seen firsthand, he responded: “It is the biggest challenge we face and we must act now before it is too late.”

Do one man’s photographs stand any chance against the massive deception apparatus orchestrated by the fossil fuel industry, when they can call in a President of the United States for as ridiculous and preposterous an Executive order as he signed today? It is hard to know.

I hope this body will rise to its best traditions and meet the needs of its constituents, whether they are coastal constituents threatened by sea level rise or farm constituents threatened by

changes in weather or forest constituents who are seeing the pine beetle destroy western forests by the millions of acres. I hope we wake up before it becomes too late.

I yield the floor.

ADJOURNMENT UNTIL 10 A.M.  
TOMORROW

The PRESIDING OFFICER. Under the previous order, the Senate stands adjourned until 10 a.m. tomorrow.

Thereupon, the Senate, at 6:12 p.m., adjourned until Wednesday, March 29, 2017, at 10 a.m.